

CLAIMS

What is claimed is:

1. A wireless communication system for providing service to mobile stations, the system comprising a supplemental communication sub-system including one or more supplemental transceiver units (STUs) connected to a supplemental switching center (SSC), wherein:
  - 5 the SSC has access to a public switched telephone network (PSTN) and is adapted to control operation of the one or more STUs; and
  - each STU has a primary function and is further adapted to support (i) a wireless communication link with at least one mobile station and (ii) a wire-line communication link with the SSC.
- 10 2. The system of claim 1, wherein the SSC is directly connected to the PSTN.
3. The system of claim 1, wherein the supplemental communication sub-system is configured to transmit voice communication signals.
- 15 4. The system of claim 1, wherein the SSC is adapted to support the primary function.
5. The system of claim 1, wherein each STU comprises:
  - 20 a radio-frequency transceiver (RFT) adapted to support the wireless communication link with the at least one mobile station; and
  - an interface adapted to support the wire-line communication link with the SSC.
6. The system of claim 5, wherein:
  - 25 each STU further comprises a TV receiver and a display screen;
  - the primary function is to receive and display TV programs;
  - the SSC is a distribution node of a cable service provider; and
  - the interface comprises a cable modem.
7. The system of claim 1, further comprising a primary communication sub-system including a plurality of base stations (BSs) connected to a mobile services switching center (MSC), wherein:
  - 30 the MSC is connected to the PSTN and is adapted to control operation of the BSs; and
  - each BS is adapted to support (i) a wireless communication link with a plurality of mobile stations and (ii) a wire-line communication link with the MSC.
- 35 8. The system of claim 7, wherein the SSC is connected to the PSTN through the MSC.

9. The system of claim 7, wherein the MSC and the SSC have a service link to coordinate transmissions for a selected mobile station.

10. The system of claim 7, wherein, when a mobile station has wireless links with a 5 corresponding BS and a corresponding STU, the supplemental communication sub-system is selected to carry transmissions for said mobile station.

11. The system of claim 7, wherein, when a mobile station has wireless links with a corresponding BS and a corresponding STU, one of the primary and supplemental communication 10 sub-systems is selected to carry transmissions for said mobile station based on signal strengths at the corresponding BS and STU.

12. Apparatus for use in a wireless communication system providing service to mobile stations, the apparatus comprising:

15 a radio-frequency transceiver (RFT) adapted to support a wireless communication link with at least one mobile station; and

an interface adapted to support a wire-line communication link with a supplemental switching center (SSC) having access to a public switched telephone network (PSTN), wherein:

20 the apparatus has a primary function and is adapted to be controlled by the SSC; and  
the wireless communication system includes the SSC.

13. The apparatus of claim 12, wherein the apparatus is adapted to transmit voice communication signals.

25 14. The apparatus of claim 12, wherein the SSC is adapted to support the primary function.

15. The apparatus of claim 12, wherein:

the apparatus further comprises a TV receiver and a display screen;

the primary function is to receive and display TV programs;

30 the SSC is a distribution node of a cable service provider; and

the interface comprises a cable modem.

16. The apparatus of claim 12, wherein:

the wireless communication system comprises a supplemental communication sub-system

35 including one or more supplemental transceiver units (STUs) connected to the SSC; and

the apparatus is one of the STUs.

17. The apparatus of claim 12, wherein the SSC is adapted to support the primary function.
18. A method of transmitting communication signals corresponding to a mobile station in a wireless communication system, the method comprising:
  - (A) selecting one of a primary communication sub-system and a supplemental communication sub-system to carry the communication signals for the mobile station; and
  - (B) transmitting the communication signals for the mobile station via the selected communication sub-system, wherein:
    - 10 the wireless communication system includes the primary and supplemental communication sub-systems;
    - the supplemental communication sub-system includes one or more supplemental transceiver units (STUs) connected to a supplemental switching center (SSC);
    - the SSC has access to a public switched telephone network (PSTN) and is adapted to control 15 operation of the one or more STUs; and
    - each STU has a primary function and is further adapted to support (i) a wireless communication link with at least one mobile station and (ii) a wire-line communication link with the SSC.
- 20 19. The system of claim 18, wherein the SSC is directly connected to the PSTN.
20. The method of claim 18, wherein the SSC is adapted to support the primary function.
21. The method of claim 18, wherein:
  - 25 the primary communication sub-system includes a plurality of base stations (BSs) connected to a mobile services switching center (MSC);
  - the MSC is connected to the PSTN and is adapted to control operation of the BSs; and
  - each BS is adapted to support (i) a wireless communication link with a plurality of mobile stations and (ii) a wire-line communication link with the MSC.
- 30 22. The method of claim 21, further comprising maintaining a service link between the MSC and the SSC.
23. The method of claim 21, wherein the SSC is connected to the PSTN through the MSC.
- 35 24. The method of claim 21, wherein step (A) comprises at least one of:

- (A1) assigning a BS to the selected mobile station; and
- (A2) assigning an STU to the selected mobile station.

25. The method of claim 24, wherein step (A) comprises making the selection based on detected  
5 signal strengths at the assigned BS and STU.

26. The method of claim 18, wherein each STU comprises:  
a radio-frequency transceiver (RFT) adapted to support the wireless communication link with the  
at least one mobile station; and  
10 an interface adapted to support the wire-line communication link with the SSC.

27. The method of claim 26, wherein:  
each STU further comprises a TV receiver and a display screen;  
the primary function is to receive and display TV programs;  
15 the SSC is a distribution node of a cable service provider; and  
the interface comprises a cable modem.